Rhodora

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JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 3 December, 1901 No. 36

HERBARIA OF NEW ENGLAND.

MARY A. DAY.

(Continued from page 283.)

Thurber, George, see Harvard University, Gray Herbarium.

Tuckerman, Edward. — Some years before his death Professor Tuckerman sent a part of his herbarium of phaenogams to the Academy at Upsala, Sweden. He retained however a portion as his own working herbarium, and this is now in possession of Mrs. Tuckerman at Amherst, Mass. Professor Tuckerman's large and valuable collection of Lichens was purchased in 1888 for the Cryptogamic Herbarium of Harvard University, where it is now preserved.

Tufts College, MEDFORD, MASSACHUSETTS. — The herbarium of Tufts College, in charge of Professor J. S. Kingsley, contains about 4000 sheets of plants. It is unorganized and at present inaccessible.

University of Maine, ORONO, MAINE. — The herbarium at this University, Professor W. M. Munson in charge, contains over 15000 species of both phaenogams and cryptogams, and includes the collection of the Rev. Joseph Blake. It is quite strong in *Compositae*, *Leguminosae*, and *Gramineae* and there is a good representation of *Musci*, Lichens, and *Algae*. In addition to the Ellis and Everhard sets there is quite a complete collection of Maine *Fungi* consisting of about 3600 species mostly collected by the late Prof. F. L. Harvey.

University of Vermont, BURLINGTON, VERMONT.—The beginnings of this herbarium were made about fifty years ago by Prof. Joseph Torrey of the University of Vermont. The collection has increased until at present it contains about 17000 specimens divided as follows:—*Fungi* (including Lichens) 6000 specimens; *Algae*, 3500 specimens; bryophytes, 700 specimens; pteridophytes, 1000 speci-

mens; spermatophytes, 5000 specimens; which are all mounted. Professor G. H. Perkins' herbarium is incorporated here, also a nearly complete set of Mr Pringle's Vermont collections and the more recent ones of Dr. A. J. Grout and W. W. Eggleston. During the last decade it has been the chief aim of the Curator, Professor L. R. Jones, to make this collection as completely representative of the Vermont flora as possible. It contains a large part of the material upon which Brainerd, Jones and Eggleston's Flora of Vermont was based.

Wellesley College, WELLESLEY, MASSACHUSETTS.—This herbarium has been especially developed in the line of cryptogams, and contains 11264 specimens representing about 8000 species. Of the phaenogams there are about 7000 specimens containing 3664 species. Among the important collections represented are the following: — Rabenhorst, Bryotheca Europaea; Warnstorf, Deutsche Laubmoose; Gottsche & Rabenhorst, Hepaticae Europaeae; Underwood & Cook, Hepaticae Americanae; Austin, Hepaticae Boreali-Americanae; Collins, Holden & Setchell, Phycotheca Boreali-Americana; Farlow, Anderson & Earle, Algae Exsiccatae Am. Bor.; A. H. Curtiss, Algae Floridanae; Ellis & Everhard, North American Fungi; Seymour & Earle, Economic Fungi; A. H. Curtiss, Plants of southern United States; Reverchon, Texan Plants; Patterson, Colorado Plants; G. E. Cooley, Alaskan Plants; Mig. Bang, Plantae Bolivianae; H. H. Rusby, Plants of South America; T. Morong, Plants of Paraguay, and many *Carices* from the Herbarium of William Boott This herbarium is in charge of Professor S. M. Hallowell and Professor C. E. Cummings.

Wesleyan University, MIDDLETOWN, CONNECTICUT.—The purchase of the Collection of Dr. Shurtleff in 1868 was the beginning of this herbarium, the only considerable addition which has since been made is the Joseph Barratt collection in 1879. It contains about 5000 species of plants which are nearly all phaenogams from New England, the grasses and sedges being better represented than any other orders. It is in the care of Professor H. W. Conn.

Wheeler, John Adams, MILFORD, NEW HAMPSHIRE. — Mr. Wheeler has a collection of about 4000 sheets of plants, including phaenogams and cryptogams, from all parts of the United States, acquired during the past six years. It contains plants from the herbaria of both Mr. Edward Tatnall of Wilmington, and Dr. A. W. Chapman of Florida.

Willey, Henry, New Bedford, Massachusetts. — The collection of Lichens formed by Mr. Willey during the last forty years contained several thousand specimens and was arranged by him systematically in two divisions. One division contained the Lichens of New Bedford, about 300 species with drawings, and the other the Lichens of other parts of the United States and foreign countries. These now are in possession of the U. S. National Museum, at Washington, D. C.

Williams, Emile Francis, Boston, Massachusetts. — Mr. Williams' herbarium contains about 40000 mounted specimens and is arranged systematically. The plants are mostly from New England, but New Jersey, eastern New York, and that part of Canada north of New England are included owing to their interest in connection with the New England flora. The plants of the White Mountains are specially well represented, Mr. Williams having collected every species known to grow above the timber line in this region. This herbarium is also intended to show the distribution of plants, therefore specimens from many localities in each state are preserved; the largest number of specimens are from Maine, New Hampshire, Vermont, and Eastern Massachusetts. Some of the collectors whose work is represented in this herbarium are Messrs. C. H. Bissell, E. Brainerd, W. Deane, E. H. Eames, W. W. Eggleston, E. & C. E. Faxon, M. L. Fernald, G. G. Kennedy and W. P. Rich.

Williams College, Williamstown, Massachusetts. — The herbarium at Williams College, Professor S. F. Clarke in charge, is a small one. It contains the herbarium of F. H. Bumstead, M. D., in which are specimens of ferns from the Wilkes Exploring Expedition, from D. C. Eaton and from Charles Wright. Here also are 23 volumes of plants which formed the herbarium of John Pierce Brace.

Yale University, New Haven, Connecticut. — The basis of this herbarium is the collection made by Professor D. C. Eaton, who commenced the work about 1850. During Professor Eaton's life the herbarium was his private property but after his death in 1896 it was given to Yale University by his son Dr. G. F. Eaton. It is estimated to contain 60000 specimens and well illustrates the North American flora but also contains many specimens from other parts of the world. The most famous part of this herbarium is the collection of ferns including Professor Eaton's types. The herbarium is now in charge of Dr. A. W. Evans.

Yale University, Forest School, NEW HAVEN, CONNECTICUT. — During the last year a herbarium of woody plants has been started by Professor J. W. Toumey, and now contains about 3000 sheets, besides numerous specimens of fruits, bundles of twigs showing buds in winter condition, cones, etc. This collection of "box material" has been more developed than the regular herbarium.

Young, Aaron, see Bates College.

Young, Herbert Andrew, see New England Botanical Club.

ADDENDA.

Blomberg, Carl, NORTH EASTON, MASSACHUSETTS. — Mr. Blomberg's herbarium consists of 2450 sheets containing 1247 species of phaenogams and 90 species of cryptogams. The collection, which is mounted and arranged in systematic order, was started in 1889 and includes about 800 plants from Easton, Massachusetts, as well as many foreign and cultivated specimens.

Elwell, Levi Harry, AMHERST, MASSACHUSETTS. In 1889 Professor Elwell began his collection of American plants which now numbers about 2500 sheets. To this he has added during the past year between 1000 and 2000 specimens, of his own collecting, from Greece and Italy. His herbarium contains nearly all the phaenogams and vascular cryptogams of Amherst and vicinity, besides many specimens from North Carolina, Florida, Kansas, Iowa, and British Columbia.

CORRECTION.

The two herbaria, mentioned on pages 256 and 257 as belonging to Horace Mann and Horace Mann the younger, were formed by one and the same person, namely Horace Mann, Jr., son of the well-known educator of that name.

NOTES ON ALGAE, — IV.

F. S. Collins.

Spirulina Meneghiniana Zanardini, Atti R. I. Inst. Veneto, Vol. VI, p. 80, 1847. This species, hitherto found only as isolated filaments among other algae, was found July 27, 1901, on the Marblehead shore, Massachusetts, near Clifton station, in considerable quantity. It formed the principal constituent of a mixture in rock tide pools, above high water mark, but reached by spray in stormy weather. At the bottom of these pools was a light green impalpable sediment, like a chemical precipitate, the least motion of the water stirring it up so that great care had to be taken to secure it for specimens. The greater part of this sediment was *S. Meneghiniana*, characterized by the filaments, less than 2 μ diam. coiled in a loose spiral, 3–5 μ diam. *S. subsalsa* Oersted, the common species of this coast, has trichomes and spiral of about the same diameter as in *S. Meneghiniana*, but in the latter species the spiral is open, in the former the turns are nearly or quite in contact. See figures in Gomont, Monogr. des Oscill., p. 250, Pl. VII.

Cylindrospermum stagnale (Kuetz.) Born. and Flah., Revision des Nost. Het., part 4, p. 250, 1888. This plant formed a dense bluish-green or brownish scum on the surface of an artificial pond at the Pogy oil factory, Bristol, Maine, near Round Pond Village, July 16, 1901. Its cylindrical spores distinguish it from all our other species except *C. minutissimum* Collins, while the smaller size of the latter, in all its parts, prevents any confusion of the two. Of the five established species of this genus recognized in Bornet and Flahault, Revision, in 1888, only two were credited to America; but now all five are known to occur in New England, as well as *C. minutissimum*, described in 1896.

At Pemaquid Point, Maine, July 18, 1901, the writer found growing on sloping rocks, exposed to the full force of the surf, which is very heavy here, what appeared to be a dense growth of *Calothrix scopulorum* (Web. and Mohr) Ag., common in such stations. On examination by the microscope, however, the filaments were seen to have abundant pseudo-branches, showing it to be of the genus *Dichothrix*. Fresh water species of *Dichothrix* are not uncommon in New England, and in temperate countries generally, but there are only two marine

species known, both epiphytic, occurring in tropical or subtropical regions, and both quite distinct from the plant now under consideration. The nearest described species would seem to be *D. compacta* (Ag.) Born. and Flah., a fresh water plant of Scandinavia of smaller dimensions and different habit. It seems safe, therefore, to consider it as a new species, characterized as follows.

DICHOTHRIX **rupicola** n. sp. Marine. Filaments forming a caespitose stratum, one mm. high, 15–22 μ diam., erect, penicillate, pseudobranched, ultimate branches flexuous-divaricate, acute. Sheath lamellate, yellow-brown, near the tip with dilated and lacerate ochreation. Trichomes aeruginous green to pale olive, 7–9 μ diam., terminating in a hair; length of articulations about equal to the diameter. Heterocysts basal. Forming a coating on sloping rocks, exposed to full force of the waves, Pemaquid Point, Maine, July 18, 1901.

CODIOLUM PUSILLUM forma **Americanum** Foslie. The *Vaucheria pusilla* of Lyngbye was placed in the genus Codiolum by Foslie, Tromsø Mus. Aarshefter, Vol. X, p. 190, and is distinguished from the other species of this genus by the long stipe, slender throughout and much narrowed at the base, and by the cylindrical or subcylindrical "clava," the latter being from one half to two thirds the length of the stipe. In forma *Americanum* the clava is generally longer, sometimes equalling the stipe, otherwise the form is the same as the type.

The specimens collected grew on a rock, near high water mark at Marblehead, Mass., covering it with a continuous coating, in the manner of *C. longipes* Foslie, but not showing so distinct a mottled aspect in drying as the latter. On June 1, 1901, and at a subsequent visit June 15, young plants and germinating spores were found in abundance among mature plants, and some of the latter were forming spores, but none quite perfect were seen. Possibly the emission of spores took place at a different time of day from the time of collecting.

At Pemaquid Point, on the same exposed rocky slope where *Dichothrix rupicola* was found, there occurred in pools at about half tide level, an abundant growth of what appeared at first to be a Cladophora, similar to *C. refracta* Areschoug, but of denser growth and with slenderer branches. On dissection and microscopic examination it became evident that the plant was not like any species of Cladophora known on this coast, the branching being confined to the extreme base of each tuft, the upper part consisting of simple, crisped filaments, much like those of *Rhizoclonium tortuosum* Kuetz. The next suppo-

sition was that it might be *R. pachydermum* Kjellm., found in northern Europe and reported from Greenland by Rosenvinge, but a specimen sent to Dr. Rosenvinge was pronounced by him to be distinct from the Greenland plant. The branching seems to be more extensive than in any genuine Rhizoclonium, while the fact that it is confined to a small basal portion of the tuft, much the greater part being quite unbranched, distinguishes it from any species of Cladophora known to the writer. On the whole it seems best to place it provisionally in the former genus.

Rhizoclonium (?) **erectum** n. sp. Forming erect tufts arising from prostrate filaments, 70–100 μ diam., of irregularly shaped, very thick-walled cells, 1–2 diam. long, from which arise branches either with a few similar branches at the base or simple throughout, 20–50 μ diam., usually 30 μ, cells 3–6 diam. long, branches up to 30 cm. long, but so much and regularly crisped and curled that the tufts seldom exceed 10 cm. in height. In tide pools, half tide to low water mark, Pemaquid Point, Maine, July 18, 1901.

Ascophyllum nodosum forma *scorpioides* (Fl. Dan.) Reinke, Atlas Deutscher Meeresalgen, p. 33. Though probably merely a form produced by the environment, of one of our commonest rock weeds, in its extreme condition it would hardly be recognized as at all connected. Besides the size being reduced everyway, the flattened frond of the type becomes nearly or quite terete, the forkings are more abundant, while the lateral branches are few or lacking; vesicles and fructification are wanting. It was found at Cape Rosier, Maine, July, 1901, forming a matted coating on mud between tide marks, among the stems of Spartina, etc.

Polysiphonia Schuebelerii Foslie, Christiania Vidensk.-Selsk. Forhand., p. 3, 1881. At Round Pond harbor, in the town of Bristol, Maine, July 14, 1901, the writer found extensive growths of *Zostera marina* near the mouth of the harbor, from low water mark to several meters depth. Several kinds of algae were growing on this *Zostera*, and at one place the predominant species over a considerable area was a four-tubed *Polysiphonia*, which appeared to be a delicate *P. violacea* (Roth) Grev. A few specimens were taken, but when examined with the microscope, the specific determination was seen to be wrong, and it was suspected that it was *P. Schuebelerii*, originally described from specimens from Finmark, and more fully described and figured by Rosenvinge, Grønlands Havalger, p. 799, fig. 2; Pl. I, figs. 1–2. A reference to Dr. Rosenvinge confirmed this im-

pression, giving an interesting addition to our flora. *P. violacea*, which it resembles in habit and in the extent of the cortication, has branches arising in the axils of the hairs; in *P. Schuebelerii* a branch arises in place of a hair. *P. Olneyi* Harv., the only other of our species for which it is liable to be mistaken, has little or no cortication, and a more decided tendency to dichotomous branching.

Spermothamnion Turneri (Mert.) Aresch. is one of the commonest algae of southern New England, sometimes being washed ashore in such quantities as to give its dark red color to water and beach for miles, but its only record north of Cape Cod is a reference by Harvey, Nereis Bor.-Am., part 2, p. 241; "var. variabile, Boston, Dr. Durkee." At Cohasset, Mass., Oct. 12, 1901, the writer found it washed ashore rather plentifully, though by no means in such abundance as had been seen at Newport, R. I., at Nantucket, or in other places. Var. *variable* Harv. (*Callithamnion variabile* Ag.) has been distinguished from the type by having the branching of the erect fronds, which arise from a creeping filament, secund or alternate; in the type this branching is chiefly opposite, but occasionally alternate. In the Cohasset specimens, while the predominant form was alternate or secund, it was not uncommon to find one and the same creeping filament producing some fronds with opposite branching, some with alternate, some chiefly secund. It would seem that the varietal name was hardly worth maintaining.

Of the species above noted, three have been issued in Collins, Holden and Setchell, Phycotheca Boreali-Americana, Fasc. XVIII; *Cylindrospermum stagnale*, No. 856, *Spirulina Meneghiniana*, No. 852, *Codiolum pusillum* forma *Americanum*, No. 869. *Rhizoclonium erectum* *Dichothrix rupicola* and *Ascophyllum nodosum* forma *scorpioides* will be issued in a later fascicle.

The fact that the *Rhizoclonium* and the *Dichothrix* have been secured in quantity sufficient for distribution, and that the *Polysiphonia* has not, illustrates a principle which the algologist, perhaps more than any other kind of botanist, should always keep in mind; in case of doubt, take a large quantity. There is no danger of exterminating a species of algae, or of seriously reducing its number in any locality. If the plant has passed fruiting, it can do no harm to gather it; if not yet in fruit, new plants are certain to take the place of what is gathered; if in full fruit, a supply of spores, sufficient to furnish next year's growth a hundred times over, must have been already deposited. The writer

secured ample supplies of the *Rhizoclonium* and of the *Dichothrix* when first seen, without any idea that they were novelties; but a search for additional *Polysiphonia*, the day after the discovery, was unavailing; nearly everything else ever found on Zostera on the Maine coast was abundant, but not a trace of the desired species. The locality where yesterday hundreds of specimens could have been gathered without moving the boat, was no longer to be found.

Malden, Massachusetts.

THE "FALL DANDELIONS" OF NORTH AMERICA.

M. L. Fernald.

The common fall dandelion of the eastern United States and Canada, the "arnica" of the Maine coast, *Leontodon autumnalis*, was apparently first recorded as an established plant in the United States in 1863 when, in the 4th edition of the Manual, Dr. Gray recorded it as "common in E. New England." The plant had been collected, however, by Cormack in Newfoundland in 1822 and there is also a specimen in the Gray Herbarium collected by Oakes (who died in 1848) in "shade" at Ipswich, Massachusetts. A specimen collected by Dr. Gray in 1848 is marked "spontaneous about Cambridge." From that time the plant has spread rapidly by roadsides and in fields throughout New England and eastern Canada, and it is now known westward to Ontario and Michigan, and south into Pennsylvania. A large form of the plant with very pubescent or even lanate involucres has been known to New England botanists for some years. This plant which cannot be separated specifically from the usually smoother *L. autumnalis* is the variety *pratensis* of Koch (*Apargia pratensis*, Link).

Leontodon autumnalis ordinarily has a more or less branching scape, the heads before anthesis are ascending, and the pappus consists of a single series of plumose bristles. Two other plants of another subgenus have been found occasionally on ballast about New York, Philadelphia, etc. These are *L. hirtus*, L. and *L. hispidus*, L. From *L. autumnalis* they are quickly distinguished by the simple naked scapes, the heads before anthesis nodding, and two rows of pappus. *L. hirtus* has recently been reported from an inland station in Penn-

sylvania, but it is not yet a weed of broad distribution. In the Gray Herbarium there is a sheet of *L. hispidus* collected by the late George Thurber in "meadows" at Providence in August, 1844. Yet there is no evidence that the plant has spread in that region. Mr. J. Franklin Collins informs me that he has never found the plant; nor is it represented from Providence in the older local herbaria which he has examined. The species may yet be found established in Rhode Island; but it is worthy of note that while *L. autumnalis*, introduced into New England in the 40's, has become an every-day weed, *L. hispidus*, collected at Providence in 1844, has apparently never obtained a foothold.

The four forms of the genus thus far known in America may be distinguished as follows:

* Scape branching: peduncle scaly-bracteate: heads before anthesis erect: pappus a single row of plumose bristles.

L. AUTUMNALIS, L. Spec. ii. 798. Involucre glabrous or slightly pubescent. — Fields and roadsides, Newfoundland to Ontario, Michigan and Pennsylvania, flowering from late May to October.

Var. PRATENSIS, Koch, Syn. 418. Involucre and tips of peduncles densely soft-pubescent.— MAINE, Orono, July 12, 1897 (*M. L. Fernald*): MASSACHUSETTS, Dorchester, June 2, 1895 (*W. Deane*); Canton, July 11, 1899 (*F. G. Floyd*); Siasconset, Nantucket, June 9, 1900 (*M. A. Day*, no. 80): CONNECTICUT, Southington, June 5, 1898 (*L. Andrews*).

* * Scape simple and naked: heads before anthesis nodding: pappus double.

L. HISPIDUS, L. Spec. ii. 799. Scape 1.5 to 3 dm. high: involucre conspicuously bristly-hirsute: all the achenes with plumose pappus.— RHODE ISLAND, meadows, Providence, Aug. 1844 (*Geo. Thurber*), not since seen: NEW YORK, ballast, Hunters Point, New York City, Aug., 1879 (*Addison Brown*).

L. HIRTUS, L. Spec. ed. 2, ii. 1123. Scape 1 to 2 dm. high: involucre glabrous; pappus of outer achenes mostly plumeless.— Ballast, New York City (*Addison Brown*), Philadelphia (*C. F. Parker, I. C. Martindale*): naturalized near Victoria, Vancouver Island (*John Ball et. al.*). Reported from Seidersville, Pennsylvania.

GRAY HERBARIUM.

Branched Broom-rape upon Tomato.— During the past season a single tomato plant in my experiment grounds was infested with the *Orbanche ramosa* L. It fastened itself upon one of the main roots of the tomato plant, and produced a base, below ground, an inch in diameter, from which a cluster of branching stems arose bearing the racemes of bluish yellow flowers in early July. While New Jersey has a record for *Orbanche minor* J. E. S. upon clover, *Conopholis Americana* (L.f.) and the old *Aphyllon uniflorum* (L.) and *Epiphegus Virginiana* (L.), this branched Broom-rape seems new to the State and, so far as it is determined, for any region north of Kentucky, where it is destructive to hemp and tobacco. The writer would like to hear whether this European parasite has previously occurred in New England or the Middle States. It is interesting that the original Linnaean name stands unchanged, a rarity in this little group of root parasites.— Byron D. Halsted, New Brunswick, New Jersey.

An unarmed Connecticut Blackberry. — Dr. C. B. Graves has brought me for examination a suite of specimens collected from a large patch of slender blackberry bushes in a damp thicket at Groton, Connecticut. The bushes, which have been carefully studied by Dr. Graves, differ from the common high blackberry of the region, *Rubus nigrobaccus*, Bailey, in their more slender usually prickleless canes, and the very elongate loose racemes. In the ordinary prickly form of *R. nigrobaccus* the inflorescences are somewhat elongate, but even in their most mature condition, at fruiting time, they are only 1 or 2 dm. long. In Dr. Graves' plant, however, the racemes are 2.5 to 3 dm. long. But the fruit of the plant is essentially like that of *R. nigrobaccus*, though drier than in the best forms of the species; and the pubescence of the two plants is essentially the same. The occurrence of occasional fine prickles on the midrib of the leaves, and their very rare occurrence on the canes further show that the Groton plant is an extreme variation of *R. nigrobaccus*, with which I take pleasure in associating the name of its discoverer. This variety may be known as

Rubus nigrobaccus, Bailey, var. **Gravesii.** Canes slender, essentially without prickles; young branches and inflorescence densely glandular-villous: leaves as in the species, but less prickly or prickleless: racemes leafy below, 2.5 to 3 dm. long; the pedicels

somewhat ascending, 2.5 to 5 cm. long: fruit globose or ovoid, about 1 cm. long. — Damp thicket, Groton, Connecticut, June 21 and Aug. 12, 1901 (*C. B. Graves*, no. 227). — M. L. Fernald, Gray Herbarium.

Some Extensions of Range.—*Ranunculus Allegheniensis*, Britton, which is not mentioned in the recently published Flora of Vermont, was collected by the writer in Smuggler's Notch, Vermont, July 5, 1897.

Acalypha Virginica, L. var. *gracilens*, Muell., whose northern limit in Gray's Manual and Britton & Brown's Ill. Flora, is given as Rhode Island and Connecticut, was collected in Bourne on Cape Cod, September 15, 1901 (*G. G. Kennedy, M. L. Fernald, E. F. Williams*), at Readville, Mass., near Boston, September 23, 1900 (*W. P. Rich, H. A. Purdie, E. F. Williams*); and at Hampton Falls, N. H., September 22, 1901 (*B. L. Robinson, E. F. Williams*).

Cyperus Grayii, Torrey, given in Gray's Manual as occurring from Plymouth, Mass., to New Jersey, was collected by the writer at Plum Island, near Newburyport, Mass., where it grew in abundance, on August 4, 1899.

Prenanthes serpentaria, Pursh (not *P. trifoliolata*, Fernald) was found growing in several places in Westwood, Mass., on October 6th, 1901, by Mr. M. L. Fernald and others. *P. trifoliolata* is the form common in this neighborhood and northwards. It is a smooth plant with the pappus included within the scales of the involucre. Westwood appears to be one of the most northern stations for *P. serpentaria* which is common southwards, and is distinguished from *P. trifoliolata* by its somewhat bristly involucre and by the very long pappus which exceeds the involucre by 1 to 2 lines. — Emile F. Williams, Boston, Mass.

LOBELIA INFLATA × CARDINALIS.

Oakes Ames.

An isolated plant of *Lobelia inflata*, L. was impregnated when the flowers were in a receptive condition with pollen of *Lobelia cardinalis*, L. The flowers were not netted nor in any way protected from insect visits as no other plant of the species was known to be within a radius of one hundred or more yards. Some of the impregnated

flowers produced seeds. These seeds were sown in boxes of earth on February 5, 1900, and placed in a greenhouse. In a few days they germinated and compact rosettes of ovate leaves were formed. On May first the plants were set out in a rock garden and there maintained their rosette form throughout the summer. They all finally died, however, before the end of winter, only one having sent up flowering shoots. Plants which in the fall of the year were transferred to a greenhouse lingered along for a short time and then also died.

The plant which bloomed had for the most part the characteristics of *L. inflata*, L., but the flower shoots were produced laterally from the rosettes, with the exception of a terminal one which presumably on account of weakness, did not bear flowers. The structural details of the flowers and fruits were the same as in *Lobelia inflata*, L., but the color of the corollas was unusual, being of a sulphur hue at first, then changing to a greenish white. As this peculiarity in color and the persistency of the compact leaf rosettes were the only convincing evidence that some change had been brought about in the constitution of the plant, it was thought that the unusual conditions in which the seeds germinated had exerted an influence. To obtain information on this point, seeds of *L. inflata*, L. were sown in the same greenhouse where the seeds of the supposed hybrid had been planted. This sowing took place on February 5, 1901. The seeds germinated in due time and small transient rosettes of leaves were formed. When placed in the rock garden the plants sent up their flower shoots in the ordinary way and were in every respect characteristic of *Lobelia inflata*, L. A comparison of the leaf rosettes of the supposed hybrid and of the species proved of value in forming conclusions. In the hybrid the rosettes were large and vigorous, and formed from thirty to forty persistent leaves. In the species the rosettes were small and in the course of the growing season disappeared.

Lobelia cardinalis, L. on the other hand in the first year forms rosettes of leaves, though much larger ones than those of the supposed hybrid, and maintains them through, at least, one growing season.

From these observations, we may conclude, that the attempt to impregnate *Lobelia inflata*, L. with pollen of *L. cardinalis*, L. was successful. But the behavior of the seedlings was not at all what

one would expect. If hybridization was effected, then the parental characters were peculiarly distributed; if it was not, then the formation of stable leaf rosettes has still to be explained.

In order to carry the experiments farther the flowers of the supposed hybrid were inter-crossed and results are now awaited.

In addition to the experiments just noted reverse crosses were made, *Lobelia cardinalis*, L. being used as the seed parent. Unfortunately the results obtained were of an uncertain nature.

Botanic Garden of Harvard University.

ERRATA.

Page 6, line 16; for *paupurculus* read *pauperculus*.
" 48, " 18; " less *read* more.
" 50, " 1; " + " + +
" 54, " 23; " toohed *read* toothed.
" 61, " 15; " *Coeleboyyne* read *Coelebogyne*.
" 88, " 13; " *hordaceus* read *hordeaceus*.
" 103, " 1; " *Panicum virgatum* read Panicum virgatum.

Page 114, line 37; for × *read* +
" 118, " 17; " spagnous *read* sphagnous.
" 128, " 42; " 18 mm. *read* 1.8 mm.
" 165, " 7; " as *read* was.
" 169, " 34; " *flexeosa* read *flexuosa*.
" 174, " 29; " *stitchensis* read *sitchensis*.
" 181, " 2; *dele* * before *Lophozia barbata*.
" 184, " 2; *for* sulula *read* subula.
" 189, " 31; " *ophiogiossoides* read *ophioglossoides*.
" 205, " 14; " T. *read* F.
" 217, " 8; " Nabulus *read* Nabalus.
" 225, " 11; " dyes *read* dies.
" 248, " 14; " *ebenium* read *ebeneum*.
" 251, " 26; " clyindric *read* cylindric.
" 264, " 26; " *leucocarpa* read *leucocarpum*.

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If he wants the rare **CALAMAGROSTIS NEMORALIS** he should visit the Chocorua-like peak of Boarstone Mt., on Lake Onawa (reached from Monson).

When he reaches Moosehead and Mt. Kineo he will naturally want to

get **CAREX PORTERI**, *C. saxatilis*, var. *miliaris*, and *C. Grahami* from the gravelly shores or low woods; and on Kineo he will look for *Draba incana*, var. *arabisans*, *Primula farinosa*, *Shepherdia canadensis*, *Carex capillaris*, and *Aspidium fragrans*.

In the Katahdin Iron Works region, too, the botanist will be very happy, but the great botanizing begins as he approaches southern Aroostook County. From the main line of the railroad beyond the Katahdin Iron Works district one has some splendid views of Mt. Katahdin itself with the neighboring masses of Sordnahunk and Traveller Mts. If one does not make up his mind at once to explore the giant amphitheatres and castellated ridges of Katahdin, he is no true lover of the best of botanical exploring and of inspiring mountain life. (For detailed account of Katahdin and its flora, as far as known, see RHODORA for June, 1901.)

At Crystal flag-station one should stop long enough to explore a bit of the great bog which furnishes the upper waters of Molunkus Stream. Following the railroad back half a mile he will find himself surrounded by masses of *Betula pumila*, *Lonicera oblongifolia*, and other northern shrubs, with an herbaceous flora including *Parnassia caroliniana*, **DROSERA LINEARIS**, *Valeriana sylvatica*, *Aster junceus*, *Pyrola rotundifolia*, var. *uliginosa*, *Tofieldia glutinosa*, *Carex chordorhiza* and *C. livida*.

If he wishes to stop for some time in the region (and who does not) he can have good accommodations at Island Falls; and there, near the Mattawamkeag River, he will get the local **ANTENNARIA RUPICOLA**, *Hieracium vulgatum*, *Erigeron acris*, and *Halenia deflexa*. In the river, itself, and in Mattawamkeag Lake he will revel in September, dragging up such prizes as *Myriophyllum Farwellii*, *M. alterniflorum*, and *Potamogeton obtusifolius*.

When Houlton is reached one should make up his mind to stop at some of the numerous villages between there and the Aroostook River, for the Cedar (Arbor-vitae) swamps of the Meduxnakeag and the Presque Isle valleys are the homes of *Cypripedium spectabile*, *Microstylis monophyllos*, *Carex vaginata*, and scores of other species of absorbing interest.

The valleys of the Aroostook and the main St. John — for instance at Fort Fairfield, Van Buren, Fort Kent, and St. Francis — furnish one of the most striking floras of New England. There among other species one will get **THALICTRUM CONFINE** and **T. OCCIDENTALE**, **OXYTROPIS CAMPESTRIS**, var. **JOHANNENSIS**, *Hedysarum boreale*, **TANACETUM HURONENSE**, **PRENANTHES RACEMOSA** and **P. MAINENSIS**, *Gentiana Amarella*, var. *acuta*, **PEDICULARIS FURBISHIAE**, **SALIX GLAUCOPHYLLA** and **S. ADENOPHYLLA**, **GOODYERA MENZIESII**, *Juncus alpinus*, var. *insignis* and **J. TENUIS**, var. **WILLIAMSII**, *Triglochin palustre*, *Scirpus Clintonii*, **CAREX CRAWEI** and **C. BICOLOR**, *Equisetum palustre* and *E. variegatum*, and *Lycopodium sitchense*.

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